

REMARKS

Claims 1-42 were examined and reported in the Office Action. Claims 1-42 are rejected. Claims 1, 9, 14, 20, 26, 29, 33, 40 and 42 are amended. Claims 1-42 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 103(a)

A. It is asserted in the Office Action that claims 1-42 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 6,138,092, issued to Zinser Jr. et al. ("Zinser") in view of U.S. Patent No. 5,809,459 issued to Bergstrom ("Bergstrom") in view of U.S. Patent No. 5,617,507, issued to Lee et al. ("Lee"), and further in view of well known prior art. Applicant respectfully disagrees.

Applicant's amended claim 1 contains the limitations of "a primary epoch analyzer coupled to the epoch locator, said primary epoch analyzer produces the a plurality of bias removed epoch samples, ... wherein said prioritized epoch parameters are reduced based on each of said plurality of epoch data parameters respective priority, said plurality of epoch parameters including a plurality of reflection coefficients, wherein said primary epoch analyzer converts the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter the plurality of bias removed epoch samples to produce a residue signal."

Applicant's amended claim 9 contains the limitations of "[a] decoder comprising: a frame disassembly and parameter decoding unit coupled to an excitation generator; wherein the decoder decompresses a plurality of compressed signals that were compressed at variable frame rates based on a plurality of prioritized epoch parameters..., said plurality of epoch parameters including a plurality of reflection coefficients, wherein said decoder approximates a residue signal produced by inverse filtering a plurality of bias removed epoch samples, where the inverse filtering is driven

by a plurality of predictor coefficients that are produced by conversion of the plurality of reflection coefficients."

Applicant's amended claim 14 contains the limitations of "...encode the plurality of signals in a compressed format; and transmit the plurality of signals in a compressed format through a transmission medium at variable frame rates based on a plurality of prioritized epoch parameters ... wherein said prioritized epoch parameters are reduced based on each of said plurality of epoch data parameters respective priority, said plurality of epoch parameters including a plurality of reflection coefficients, wherein an epoch analyzer converts the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter a plurality of bias removed epoch samples to produce a residue signal."

Applicant's amended claim 20 contains the limitations of "...receive the plurality of signals in a compressed format through a transmission medium at variable frame rates based on a plurality of prioritized epoch parameters to reduce signal bandwidth ... said plurality of epoch parameters including a plurality of reflection coefficients, wherein said instruction to decode approximates a residue signal produced by inverse filtering a plurality of bias removed epoch samples, where the inverse filtering is driven by a plurality of predictor coefficients that are produced by conversion of the plurality of reflection coefficients."

Applicant's amended claim 26 contains the limitations of "...transmitting the plurality of signals in a compressed format through a transmission medium at variable frame rates based on a plurality of prioritized epoch parameters ... analyzing a first epoch, wherein said prioritized epoch parameters are reduced based on each of said plurality of epoch data parameters respective priority, said plurality of epoch parameters including a plurality of reflection coefficients, wherein analyzing the first epoch includes converting the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter a plurality of bias removed epoch samples to produce a residue signal."

Applicant's amended claim 33 contains the limitations of "...receiving a plurality of signals in a compressed format through a transmission medium at variable frame rates based on a plurality of prioritized epoch parameters to reduce signal bandwidth and by combining epochs, by correcting presumed errors in successive epoch lengths, and by extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas, while preserving perceptual quality of the plurality of the signals; decoding the plurality of compressed signals; and transmitting the decoded signals to a receiving device, wherein said prioritized epoch parameters are reduced based on each of said plurality of epoch data parameters respective priority, wherein said plurality of epoch parameters including a plurality of reflection coefficients, wherein said decoding approximates a residue signal produced by inverse filtering a plurality of bias removed epoch samples, where the inverse filtering is driven by a plurality of predictor coefficients that are produced by conversion of the plurality of reflection coefficients."

Applicant's amended claim 40 contains the limitations of "means for analyzing an epoch; means for correcting presumed errors in successive epoch lengths; and means for extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas, wherein said plurality of epoch parameters including a plurality of reflection coefficients, wherein said means for analyzing the epoch includes converting the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter the plurality of bias removed epoch samples to produce a residue signal."

Applicant's amended claim 42 contains the limitations of "...the means for decoding comprises decompressing the plurality of compressed signals at variable frame rates based on a plurality of prioritized epoch parameters and by combining epochs, correcting presumed errors in successive epoch lengths, and by extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas, to dynamically reduce signal bandwidth while preserving perceptual signal quality, said plurality of epoch parameters including a plurality of reflection coefficients, wherein said means for decoding further includes approximating a residue signal produced by inverse filtering a plurality of bias removed epoch samples, where the inverse filtering

is driven by a plurality of predictor coefficients that are produced by converting the plurality of reflection coefficients."

In other words, Applicant's claimed invention relates to Apparatus, methods and processes using a dynamic variable frame rate technique for compressing and decompressing digitized signals. Applicant's claimed invention dynamically adjusts the frame rate required for transmission based on a plurality of prioritized epoch parameters (i.e., reducing the epoch parameters based on their respective priorities) and by combining epochs, by correcting presumed errors in successive epoch lengths, and by extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas, to dynamically reduce signal bandwidth while preserving perceptual signal quality. The epoch parameters include reflection coefficients. An epoch analyzer converts the reflection coefficients to predictor coefficients, and the predictor coefficients are used to inverse filter bias removed epoch samples to produce a residue signal.

According to MPEP 2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Zinser discloses a code book technique for tracking and reproducing pitch and voice decisions using an encoder and a decoder subsystem. The invention disclosed by Zinser incorporates a process for dealing with pitch harmonics outside the normal framing range of linear prediction coding (LPC) voice encoders. It is noted that it is asserted in the Office Action that "Zinser does not specifically teach that the data are transmitted at variable frame rates." (Office Action, page 3, first complete paragraph).

It is also asserted that "implementation of variable frame rates in a compression scheme was well known in the art..." (Office Action, Id.). The Office Action, however, does not give any specific teachings known in the art as examples of such teachings. Applicant, therefore, traverses the assertion that implementation of variable frame rates in a compression scheme was well known in the art (See MPEP 2144.03). Applicant notes that there is a difference between transmitting data at a variable rate, and transmitting data with variable frame rates.

Further, one skilled in the art would know that frame rate, bandwidth rate and data rate all have different meanings in the art. For example, Zinser discloses variable data transmission rates with a constant frame rate. In fact, there are many places in Zinser where fixed frame rate is discussed (See, e.g., Zinser, column 10, lines 52-53; claim 5). Moreover, Zinser does not teach, disclose or suggest transmission at *variable frame rates based on a plurality of prioritized epoch parameters and by combining epochs, by correcting presumed errors in successive epoch lengths, and by extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas*. In fact, Zinser specifies that epoch parameters are held constant. (See Zinser, column 15, line 55 to column 16, line 30). And, Zinser does not disclose teach or suggest "said plurality of epoch parameters including a plurality of reflection coefficients, wherein said primary epoch analyzer converts the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter the plurality of bias removed epoch samples to produce a residue signal." Additionally, Zinser does not teach, disclose or suggest similar limitations contained in Applicant's amended claims 9, 14, 20, 26, 33, 40 and 42, as listed above.

Bergstrom discloses a method for extracting and tracking pitch using orthogonal error waveforms. Bergstrom, however, does not teach, disclose or suggest "the encoder compresses a plurality of signals at variable frame rates based on a plurality of prioritized epoch parameters to dynamically reduce signal bandwidth while preserving perceptual signal quality and by combining epochs, by correcting presumed errors in successive epoch lengths, and by extending epoch length patterns indicative of voiced speech areas into unvoiced speech areas, wherein said prioritized epoch parameters are

reduced based on each of said plurality of epoch data parameters respective priority, said plurality of epoch parameters including a plurality of reflection coefficients, wherein said primary epoch analyzer converts the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter the plurality of bias removed epoch samples to produce a residue signal." Moreover, Bergstrom does not teach, disclose or suggest similar limitations contained in Applicant's amended claims 9, 14, 20, 26, 33, 40 and 42, as listed above.

Lee discloses a method and system for synthesizing speech using a periodic waveform decomposition and relocation coding scheme. The signals are decomposed into wavelets. The wavelets are coded and stored. The wavelets nearest to positions where the wavelets are to be located are selected from the stored wavelets and decoded. The decoded wavelets are then superimposed to each other. Nowhere in Lee is it disclosed, taught or suggested using reducing epoch parameters based on priority. It is asserted in the Office Action that prioritized epoch parameters are reduced based on each of said plurality of epoch data parameters respective priority is well known in the art as evidenced by Lee. Applicant traverses this assertion as speech segment coding and pitch control methods taught by Lee does not select and arrange epoch parameters based on priority. Lee only selects wavelets, codes and stores the wavelets, selects wavelets and superimposes the wavelets. This is clearly distinguishable from Applicant's claimed invention.

Further, Lee does not teach, disclose, or suggest the limitations of "said plurality of epoch parameters including a plurality of reflection coefficients, wherein said primary epoch analyzer converts the plurality of reflection coefficient to a plurality of predictor coefficients, and the plurality of predictor coefficients are used to inverse filter the plurality of bias removed epoch samples to produce a residue signal." Moreover, Lee does not teach, disclose or suggest similar limitations contained in Applicant's amended claims 9, 14, 20, 26, 33, 40 and 42, as listed above.

Since neither Zinser, Bergstrom, Lee, undisclosed well known prior art, nor the combination of the four, disclose, teach or suggest all the limitations contained in

Applicant's amended claims 1, 9, 14, 20, 26, 33, 40 and 42, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claims 1, 9, 14, 20, 26, 33, 40 and 42 are not obvious over Zinser in view of Bergstrom in view of Lee, and further in view of undisclosed well known prior art since a *prima facie* case of obviousness has not been met under MPEP 2142. Additionally, the claims that directly or indirectly depend from Applicant's amended claims 1, 9, 14, 20, 26, 33, and 40, namely claims 2-8, 10-13, 15-19, 21-25, 27-32 and 32, 34-39, and 41, respectively, are also not obvious over Zinser in view of Bergstrom in view of Lee and further in view of undisclosed prior art for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection for claims 1-42 is respectfully requested.

CONCLUSION

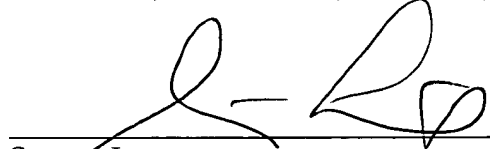
In view of the foregoing, it is believed that all claims now pending, namely Claims 1-42, patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN

Dated: February 10, 2004

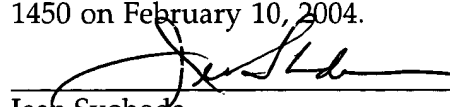


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